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Mineralogy and geochemistry of the Bozjani copper deposit, west of Fariman, NE Iran

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Abstract: The Bozjani copper deposit is located about 30 km west of Fariman city, Khorasan Razavi Province. Host rocks to mineralization are mostly pridotites and basalts of Fariman ophiolitic sequence. Ore body consists of two parts: lower and upper. Lower part has formed a stringer of primary sulfides as stockwork, veinlets, and disseminated. Uppermost part has lenticular shaped dominated by ribbon-like, fine grain and rounded primary sulfides. Mineralogical investigations show pyrite, marcasite, chalcopyrite, bornite, sphalerite, galena, native copper, and magnetite are primary minerals of ore body associated with secondary minerals as coprite, tenorite, covellite, chalcocite, chrysocolla, malachite, azurite, jarosite, limonite, and hematite. According to geochemistry of immobile elements, the host mafic rocks fall in boninite tectonic setting. Mass balance calculations show enrichments of Cu, Pb, Th, As, Ag, Tl and U during evolution of Bozjani copper deposit. The results of host rock, structure, texture, mineralogy and geochemistry in this research reveal that Bozjani deposit resemble volcanic massive sulfide deposit dominated by mafic rocks. Evolution of this deposit is related to four stages including hydrothermaly alteration, seafloor weathering, regional metamorphic and weathering of terrestrial.

Keywords: *copper ore deposit; boninite; ophiolitic sequence; Fariman.*

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